a top electrode configured to be coupled to a first RF power source having a first RF frequency;

a bottom electrode configured to be coupled to a second RF power source having a second RF frequency that is lower than said first RF frequency;

an insulating shroud that lines an interior of said chamber, said insulating shroud being configured to be electrically floating during said processing; and

a perforated plasma confinement ring disposed outside of an outer periphery of said bottom electrode, a top surface of said perforated plasma confinement ring being disposed below a top surface of said substrate, said perforated plasma confinement ring being conductive and said perforated plasma confinement ring being electrically grounded during said processing.

24.(amended) A perforated plasma confinement ring device configured to be disposed inside a plasma processing reactor during processing, comprising:

a conductive ring having an inner and outer diameter, said inner diameter being dimensioned to surround [an] a bottom electrode in said plasma processing reactor, said bottom electrode providing support for a substrate to be processed, said bottom electrode being coupled to a first RF source having a first RF frequency, said bottom electrode being spaced apart from a top electrode, said top electrode being coupled to a second RF source having a second RF frequency, said second RF frequency being greater than said first RF frequency, said conductive ring being electrically grounded during said processing, said conductive ring having therein a plurality of perforations, said plurality of perforations being dimensioned to permit by-product gases from said processing to pass through while substantially confining a plasma to the upstream side of said conductive ring, and said conductive ring removing electrons from said plasma and thereby increasing ion energy in said plasma.

~~29.~~ ~~32.~~ (amended) The perforated plasma confinement ring [processing reactor] of claim ~~28~~ 31 wherein the [gap] gaps between adjacent ones of said concentric ring perforations are between about 1/32 and about 1/8 of an inch.

~~30.~~ ~~33.~~ (amended) The perforated plasma confinement ring [processing reactor] of claim ~~27~~ 24 wherein a percentage of open area of said perforated plasma confinement ring is above about 20%.

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34. (amended) The perforated plasma confinement ring [processing reactor] of claim 24 wherein a percentage of open area of said perforated plasma confinement ring is about 50%.

In the Drawings

Figs.1 and 2 are amended, as required by the Examiner, to include the legend "prior art".

REMARKS

Claims 1, 24, and 32-34 are amended. Claims 1-34 remain in the application. The specification is amended in two places in response to the Examiner's suggestion. Figs. 1 and 2 are amended as required by the Examiner.

Claim 1 is amended by deletion of "semiconductor" in the first line. Claim 1 is further amended by addition of the phrase "said plasma confinement ring being conductive". Support for this amendment is to be found in the specification at, for example, page 3 line 16, page 9 lines 16-17, and page 11 lines 5-10.

Support for the amendment to claim 24 is to be found in the specification at, for example, page 8, line 22 to page 9, line 216.

The amendments to claims 32-34 are corrections.

Issues under 35USC section 103(a)

Claims 1, 2, 4, 6, and 9 stand rejected as being unpatentable over the Prior Art admitted by the present applicants in view of Shan et al. and Hiroto et al. The rejection is respectfully traversed.

The rejection appears to be based on a misapprehension that the present invention, like the invention disclosed by Shan et al., uses a plasma shield in order, in the words of the statement of rejection "to avoid material deposition on the wall and also operate at a lower dc bias voltage and thus avoiding the problems associated with high dc bias." In fact, the present invention uses a conductive plasma confinement ring to solve a problem that is very different from the problem addressed by Shan et al. For the purpose of exposing the difference, a comparison of the two inventions follows.

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